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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,180	11/24/2003	Pankaj Mehra	200301299-3	7005

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

ZHU, BO HUI ALVIN

ART UNIT	PAPER NUMBER
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2619

MAIL DATE	DELIVERY MODE
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03/11/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/722,180

Applicant(s)

MEHRA, PANKAJ

Examiner

Bo Hui A. Zhu

Art Unit

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. Claims 1 – 7, 11 – 14, 16 – 21, 29 – 37 and 41 – 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Baty et al. (US 5,243,704).

(1) with regard to claims 1, 16 and 32:

Baty et al. discloses a system and method, comprising: a plurality of first nodes (12, 14, 16, 18, 20, 22 and 24 on Fig. 1) interconnected as a balanced incomplete block design of the form $2-(v, k, 1)=b$, wherein v first nodes ($v = 7$), arranged in b groups of k first nodes ($b = 7$ and $k = 3$), are interconnected such that each pair of first nodes appears in only one group of the b groups; and a plurality of first forwarding nodes (26, 28, 30, 32, 34, 36 and 38 on Fig. 1) configured to interconnect the plurality of first nodes; a plurality of sets of second nodes (12a, 12b and 12c of node 12 is a set of second nodes; 14a, 14b and 14c of node 14 is another set of second nodes; same for nodes 16, 18, 20, 22 and 24) wherein each second node is connected to one of the first nodes (e.g. 12a is connected to 12), and wherein each of the second nodes is interconnected to every other second node (e.g. 12a is connected to every other second nodes by 26, 28 – 38 and each interface section inside each node, e.g. 40 on 12).

(2) with regard to claims 2, 17 and 33:

Baty et al. further discloses each second node is interconnected to other second nodes via at least one first node (because every second node is on a first node, e.g. 12a on 12, 14a on 14, each second node is interconnected to every other second node via at least one of the first node).

(3) with regard to claims 3, 4, 18, 19, 34 and 35:

Baty et al. further discloses that each first node includes at least one first switch (40, 42, 44 and 46a – 46c on Fig. 1); and each second node in said plurality of sets of second nodes is interconnected to other second nodes via said at least one first switch (column 5, lines 12 – 31).

(4) with regard to claims 5, 6, 20 and 36:

Baty et al. further discloses each of said plurality of sets of second nodes is interconnected to another of said plurality of sets of second nodes via said at least one first switch; and said at least one first switch interconnects one of said plurality of sets of second nodes to another of said plurality of sets of second nodes (column 5, lines 12 – 31).

(5) with regard to claims 7, 21 and 37:

Baty et al. further disclose the at least one first switch is shared with at least two of said plurality of sets of second nodes (e.g. the switch in node 12 is shared with 12a, 12b and 12c).

(6) with regard to claims 11, 29 and 41:

Baty et al. further discloses each second node in said plurality of sets of second nodes is configured with at least two communications ports (e.g. node 12a has two ports, one is connected to bus 26 and the other one is connected to a switching unit 42).

(7) with regard to claims 12, 30 and 42:

Baty et al. further discloses that connections between second nodes in said plurality of sets of second nodes are partitioned into a plurality of incomplete fabrics

(e.g. second nodes 12a and 12b are connected by interface section 40 and processing section 42, this connection is an incomplete fabric).

(8) with regard to claims 13 and 43:

Baty et al. further discloses at least one of said plurality of first forwarding nodes are chosen from a group consisting of routers, switches, crossbars, optical rings, backplanes, buses, interconnections, and links (column 4, lines 50 – 54).

(9) with regard to claims 14, 31:

Baty et al. further discloses that each second node in said plurality of sets of second nodes is interconnected to every other second node via at least one of said plurality of first nodes (because every second node is on a first node, e.g. 12a on 12, 14a on 14, each second node is interconnected to every other second node via at least one of the first node).

Claim Rejections - 35 USC § 103

2. Claims 8 – 10, 15, 22 – 28 and 38 – 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baty et al. (US 5,243,704) in view of Kim (US 5,892,932).

(1) with regard to claims 8, 22 and 38:

Baty et al. does not disclose that each of said plurality of sets of second nodes is further divided into a plurality of sub-sets of second nodes.

Kim teaches each of the plurality of sets of second nodes is further divided into a plurality of sub-sets of second nodes (Fig. 1, each switching apparatus has a plurality of interfaces). It would have been desirable to have a plurality of interfaces for each port

of the system because it would improve the functionality of the system by providing more connection interfaces. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the teaching of Kim in the system of Baty et al.

(2) with regard to claims 9, 28 and 39:

Baty et al. does not disclose the plurality of sub-sets of second nodes in at least one of said plurality of sets of second nodes are interconnected to each other via a second switch.

Kim teaches the plurality of sub-sets of second nodes in at least one of said plurality of sets of second nodes are interconnected to each other via a second switch (the interfaces are interconnected to each other via the time multiplex bus, Fig. 1). It would have been desirable having plurality of sub-sets of second nodes in at least one of said plurality of sets of second nodes interconnected to each other via a second switch because it would lead to more efficient usage of system resource by utilizing one switch to control the switching of all the interfaces. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the teaching of Kim in the system of Baty et al.

(3) with regard to claim 10:

Baty et al. discloses that the plurality of sub-sets of second nodes are interconnected to each other via at least one of said at least one first switches within one of said plurality of first nodes (e.g. the switch on node 12 interconnects nodes 12a,

12b and 12c, thus any connection between these nodes would be controlled by the switch).

(4) with regard to claim 23:

Baty et al. further discloses configuring a plurality of first forwarding nodes (26, 28, 30, 32, 34, 36 and 38 on Fig. 1) to interconnect the plurality of first nodes.

(5) with regard to claim 24:

Baty et al. further discloses at least one of said plurality of first forwarding nodes are chosen from a group consisting of routers, switches, crossbars, optical rings, backplanes, buses, interconnections, and links (column 4, lines 50 – 54).

(6) with regard to claims 15 and 25:

Baty et al. discloses that the plurality of sub-sets of second nodes are interconnected to each other via one of said plurality of first forwarding nodes (e.g. forwarding node 26 connects all the connections passing second node 12a).

(7) with regard to claim 26:

Baty et al. discloses that configuring a plurality of second forwarding nodes to interconnect the plurality of sets of second nodes (nodes 26, 28, 30 – 38 that are second forwarding nodes).

(8) with regard to claim 27:

Baty et al. further discloses at least one of said plurality of second forwarding nodes are chosen from a group consisting of routers, switches, crossbars, optical rings, backplanes, buses, interconnections, and links (column 4, lines 50 – 54).

(9) with regard to claim 40:

Baty et al. further discloses that each first node includes at least one switch (40, 42, 44 and 46a – 46c on Fig. 1).

3. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baty et al. (US 5,243,704).

(1) with regard to claim 44:

Baty et al. does not disclose the method is executed recursively. However, the Examiner takes Official Notice that the technique of recursion is well known in the art. Using recursion or recursive method would be desirable because it would allow an infinite set of possible designs to be defined or produced by a finite method or program, thus make the process of design more efficient. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use recursion in the method as taught by Baty et al.

Response to Arguments

4. Applicant's arguments filed on December 17, 2007 have been fully considered but they are not persuasive.

5. Applicant argues that the cited reference (Baty) does not discloses "a multi-fabric interconnection system comprising a plurality of first forwarding nodes ... to every other second node" (see page 9 of the Remarks). The Examiner respectfully disagrees. Baty discloses a multi-fabric interconnection system 10, as shown on Fig. 1. System 10, which also provides a method for achieving the functionality of system 10, comprises a

plurality of first nodes (12, 14, 16, 18, 20, 22 and 24) interconnected in a mathematical form of a balanced incomplete block design defined as $2 - (v, k, 1) = b$ with $v = 7$, $b = 7$ and $k = 3$; a plurality of first forwarding nodes (26, 28, 30, 32, 34, 36 and 38) configured to interconnect the plurality of first nodes (12, 14, 16, 18, 20, 22 and 24); a plurality of sets of second nodes (12a, 12b and 12c of node 12 is a set of second nodes; 14a, 14b and 14c of node 14 is another set of second nodes; same for nodes 16, 18, 20, 22 and 24) wherein each second node is connected to one of the first nodes (e.g. 12a is connected to 12), and wherein each of the second nodes is interconnected to every other second node (e.g. 12a is connected to every other second nodes by 26, 28 – 38 and each interface section inside each node, e.g. 40 on 12).

6. Applicant further argues that the Examiner's interpretations for the term "first node", "first forwarding node" and "second nodes" as claimed in claim 1 are improper. The Examiner respectively disagrees. Baty discloses the claimed "first nodes" (e.g. 12) as nodes coupled to one another by buses (e.g. 26). Baty's buses (e.g. 26) can be applied to correspond with the claimed "first forwarding nodes" because they are a form of buses, interconnections, links, etc. Baty also discloses the "second nodes" (e.g. 12a) because they are nodes that perform the same functionality as the claimed second nodes in claim 1. The Examiner strongly believes that the interpretations as applied for all the nodes as claimed in claim 1 are all reasonable and proper. Similar arguments apply to claims 16 and 32.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bo Hui A. Zhu whose telephone number is (571)270-1086. The examiner can normally be reached on Mon-Thur 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BZ
Examiner
February 20, 2008

/Hassan Kizou/
Supervisory Patent Examiner, Art Unit 2619